SEQUENCE LISTING

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<110> Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo
     Tadanori Mayumi
     Yasuo Tsutsumi
     Shinsaku Nakagawa
<120> TNF antagonist and TNF inhibitor containing it as an effective ingr
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<160> 90
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Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
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                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gin Val Leu Phe
Lys Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
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Ser Arg Ile Ala Vai Ser Tyr Gin Thr Lys Vai Asn Leu Leu Ser Ala
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lle Lys Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Lys
                                 105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Lys
                             120
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
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gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
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gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                            40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
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tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                    70
65
age ege ate gee gte tee tac eag ace eee gte aac ete ete tet gee 288
Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro 11e Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
                            120
        115
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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 Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg

 20
 25

 gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144

 Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gin Leu

 35
 40

 45

 gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192

 Val Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Val Leu Phe

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 60

 tcg ggc caa ggc tac agc tcc atc acc acc atc 240

Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile

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75
                    70
ago ogo ato goo gto too tao cag aco ogg gto aac etc etc tot goo 288
Ser Arg Ile Ala Val Ser Tyr Gln Thr Arg Val Asn Leu Leu Ser Ala
                                     90
ate gee age eec tge cag agg gag ace eea gag ggg get gag gee ete 336
lle Ala Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Leu
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag acc 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Thr
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
    130
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Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
god aat god oto otg god aat ggo gtg gag otg aga gat aac cag otg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Vai Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
ago ogo ato goo gto too tao cag aco gao gto aac etc etc tot goo 288
Ser Arg lie Ala Vai Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
atc gcc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc ctc 336
lie Ala Ser Pro Cys Gin Arg Glu Thr Pro Giu Gly Ala Glu Ala Leu
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag acc 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Thr
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125
                            120
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ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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Ala Glu Ser Gly Gin Val Tyr Phe Gly 11e lle Ala Leu
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
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Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Xaa Asn Xaa Xaa
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Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                              40
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
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Ser-Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
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Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                                      90
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                                 105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                                                125
                             120
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Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
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god aat god otd otg god aat ggo gtg gag otg aga gat aac dag otg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gin Leu
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gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
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tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
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ago ogo ato goo gto too tao cag aco oco gto aac oto oto tot goo 288
Ser Arg lie Ala Val Ser Tyr Gin Thr Pro Vai Asn Leu Leu Ser Ala
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atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
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                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
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Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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                        135
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Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Głu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
                                              60
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                                         75
                     70
Ser Arg Ile Xaa Xaa Xaa Xaa Xaa Pro Val Asn Leu Leu Ser Ala
                                      90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
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Pro Trp Tyr Giu Pro lie Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro

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120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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                                           140
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                                                 45
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
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ago ogo ato nns nns nns nns nns coo gto aac cto cto tot goo 288
Ser Arg Ile Xaa Xaa Xaa Xaa Xaa Xaa Pro Val Asn Leu Leu Ser Ala
                 85
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Giy Ala Giu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
                                                125
ggt gac ega etc age get gag atc aat egg eec gac tat etc gac tit 432
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tct ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gin Val Tyr Phe Gly Ile Ile Ala Leu
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<213> Artificial Sequence
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Ser Gly Thr Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu

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<210> 10

<211> 146

<212> PRT

<213> Artificial Sequence

<220>

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<400> 10

 Val Arg Ser Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val

 1
 5
 10
 15

 Val Ala Asn Pro Gin Ala Glu Gly Gln Leu Gln Trp Ser Asn Arg Tyr
 20
 25
 30

 Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
 35
 40
 45

 Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
 50
 60

 Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
 65
 70

 Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala

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85
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                              105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                  120
                                              125
       115
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
                                       140
   130
                      135
Ser Met
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<212> PRT
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Val Ala Asn Pro Gln Ala-Glu Gly Gln Leu Gln Trp His Asn Asn Thr
                                25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                                               45
                           40
Val Vai Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                                        75
Ser Arg IIe Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                               105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                           120
                                               125
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
                       135
Asp Ser Asn Gly Gin Val Tyr Phe Gly Ile Ile Ala Leu
<210> 12
<211> 157
<212> PRT
<213> Artificial Sequence
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<220>

<223> Clone No. 8

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<212> PRT

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<223> Clone No. 9

<400> 13

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Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Ser Asn Pro Met
20 25 30

Ala Asn Ala Leu Leu Ala Asn Giy Val Giu Leu Arg Asp Asn Gin Leu
35 40 45

Val Val Pro Ser Giu Giy Leu Tyr Leu I le Tyr Ser Gin Val Leu Phe
50 55 60

Ser Giy Gin Giy Cys Pro Ser Thr His Val Leu Leu Thr His Thr I le
65 70 75 80

Ser Arg I le Ala Val Ser Tyr*Gin Thr Pro Val Asn Leu Leu Ser Ala

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val

85 90 95

Ile Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
100 105 110

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Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
                           120
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
              135
                                         140
Ala Asn Pro Gly Gln Val Tyr Phe Gly lie lie Ala Leu
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                                     155
<210> 14
<211> 157
<212> PRT
<213> Artificial Sequence
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Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gin Leu
                           40
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                        55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                   -70
                                       75
Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                                    90
                85
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                               105
Pro Trp Tyr Glu Pro 11e Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                          120
                                              125
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                     135 .
Lys Asp Thr Gly Gln Val Tyr Phe Gly 11e 11e Ala Leu
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<211> 157
<212> PRT
<213> Artificial Sequence
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<223> Clone No. 11

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<220> <223> Clone No. 12

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135
Arg Glu Thr Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
                    150
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<400> 17
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Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                            . 40
Val Val Pro Ser Glu Gly Leu Tyr Leu 1le Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr: His Val Leu Leu Thr His Thr Ile
                     70
                                         75
Ser Arg IIe Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
Gly Asp Arg Leu Ser Ala Glu 11e Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                            140
Ala Asp Asp Gly Gln Val Tyr Phe Gly 11e 11e Ala Leu
                    150
<210> 18
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<212> PRT
<213> Artificial Sequence
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
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Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg

25

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Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                        55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lie
                                        75
                    70
Ser Arg Ile Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
                                    90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                                               125
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                       135
Ala Asn Asp Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
<210> 19
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 35
<400> 19
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Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Vai Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lie
                    70
                                         75
Ser Arg Ile Thr Pro Ala Ile Asn Arg Pro Val Asn Leu Leu Ser Ala
                85
                                    90
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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Ala Glu Ser Gly Gin Val Tyr Phe Gly Ile Ile Ala Leu
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145

150

155

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Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
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Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
                    70
                                         75
Ser Arg. Ile Ala Pro Gly Tyr Ser His Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
       115
                            120
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Giu Ser Gly Gin Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 21
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<212> PRT
<213> Artificial Sequence
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
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```
      Val
      Val
      Pro
      Ser
      Glu
      Gly
      Leu
      Tyr
      Leu
      I le
      Tyr
      Ser
      Gln
      Val
      Leu
      Phe
      His
      Ser
      Gln
      Val
      Leu
      Leu
      Thr
      His
      Thr
      I le
      Fro
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<210> 22

<211> 157

<212> PRT

<213> Artificial Sequence

<220>

<223> Clone No. 38

<400> 22

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu 40 45 Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile Ser Arg IIe Gly Gly Pro Tyr Gln Arg Pro Val Asn Leu Leu Ser Ala 85 90 lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn 105 Pro Trp Tyr Glu Pro 11e Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro 120 Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe 135 Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu

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<213> Artificial Sequence
<220>
<223> Clone No. 5
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg agg aac tcg cac 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Arg Asn Ser His
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75
age ege ate gee gte tee tae eag ace eee gte aac ete ete tet gee 288
Ser Arg IIe Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
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tcg ggc acc ggg cag gtc tac ttt ggg atc att gcc ctg
Ser Gly Thr Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
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<210> 24
<211> 441
<212> DNA
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<213> Artificial Sequence

<223> Clone No. 6

<220>

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<400> 24
gto aga toa tot tot oga acc cog agt gac atg.cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                      10
gta gca aac cct caa gct gag ggg cag ctc cag tgg tcg aac cgg tac 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Ser Asn Arg Tyr
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
 65
                                          75
ago ogo ato goo gto too tao oag aco oco gto aac oto oto tot goo 288
Ser Arg IIe Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
tcc atg tag
Ser Met
145
<210> 25
<211> 471
<212> DNA
<213> Artificial Sequence
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<223> Clone No. 7
<400> 25
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
 1
gta gca aac cct caa gct gag ggg cag ctc cag tgg cac aac aac acg 96
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp His Asn Asn Thr
             20
                                 25
```

```
god aat god oto otg god aat ggo gtg gag otg aga gat aac cag otg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75
age ege ate gee gte tee tac eag ace eec gte aac etc etc tet gee 288
Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115 •
                         120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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gac too aac ggg cag gto tac ttt ggg atc att gcc ctg
Asp Ser Asn Gly Gin Val Tyr Phe Gly lie lle Ala Leu
                    150
<210> 26
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 8
gto aga toa tot tot oga acc cog agt gac atg cot gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg cgc aac gag cac 96
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Arg Asn Glu His
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
                                             60
tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
```

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Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr He
                     70
                                         -75
ago ogo ato goo gto too tac cag aco coo gto aac ctc ctc tot goo 288
Ser Arg lie Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
aac aac gog ggg cag gtc tac ttt ggg atc att goc ctg
Asn Asn Ala Gly Gln Val Tyr Phe Gly 11e 11e Ala Leu
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                    150
<210> 27
<211> 471
<212> DNA
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<220>
<223> Clone No. 9
<400> 27
gtc aga toa tot tot cga acc ccg agt gac atg cot gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg agc aac ccc atg 96
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Ser Asn Pro Met
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
65
                     70
                                          75
ago ogo ato goo gto too tao oag aco oco gto aac oto oto tot goo 288
Ser Arg Ile Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
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lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Glu Gly Ala Glu Ala Asn

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100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
       115
                            120
                                                125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                            140
gcc aac ccc ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Asn Pro Gly Gln Val Tyr Phe Gly He He Ala Leu
<210> 28
<211> 471
<212>, DNA
<213> Artificial Sequence
<220>
<223> Clone No. 10
<400> 28
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                                                 45
         35
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln-Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
ago ogo ato goo gto too tao oag aco oco gto aac oto oto tot goo 288
Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                 85
atc egc agc ecc tgc cag agg gag acc eca gag ggg get gag gec aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
            100
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro IIe Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
                                                125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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135

130

aag gac acg ggg cag gtc tac ttt ggg atc att gcc ctg Lys Asp Thr Gly Gln Val Tyr Phe Gly 11e 11e Ala Leu 145 150 155

<210> 29 <211> 471 <212> DNA <213> Artificial Sequence

<223> Clone No. 11

<400> 29

<220>

gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val

1 5 10 15
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg

20 25 30

gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144 Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu 35 40 45

gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192 Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe 50 55 60

tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240 Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lie 65 70 75 80

ago ogo ato goo gto too tao oag aco oco gto aac oto oto tot goo 288 Ser Arg IIe Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala 85 90 95

atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336 Ile Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn 100 105 110

ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro IIe Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
115 120 125

ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432 Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe 130 135 140

cgg acg gac ggg cag gtc tac ttt ggg atc att gcc ctg Arg Thr Asp Giy Gin Val Tyr Phe Giy IIe IIe Ala Leu 145 150 155

<210> 30 <211> 471

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<213> Artificial Sequence
<220>
<223> Clone No. 12
<400> 30
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
  1
                  5
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
god aat god oto otg god aat ggd gtg gag otg aga gat aad dag otg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Val Leu Phe
     50
                         55
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
                                         75
ago ogo ato goo gto too tac oag aco oco gto aac oto oto tot goo 288
Ser Arg IIe Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                                     90
ate ege age eec tge eag agg gag ace eea gag ggg get gag gee aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
          100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Giu Pro Ile Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
                                            140
agg gag acg ggg cag gtc tac ttt ggg atc att gcc ctg
Arg Glu Thr Gly Gln Val Tyr Phe Gly lie lie Ala Leu
145
                    150
<210> 31
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 13
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<400> 31

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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Głu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Va! Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
    -50
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
ago ogo ato goo gto too tao oag aco oco gto aac cto cto tot goo 288
Ser Arg Ile Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Aia Asn
            100
                               105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
                                                125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gac gac ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Asp Asp Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
145
                    150
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<211> 471
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<213> Artificial Sequence
<220>
<223> Clone No. 14
<400> 32
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
```

gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144

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Ala Asn Ala Leu Leu Ala Asn Giy Val Glu Leu Arg Asp Asn Gin Leu
                              40
 gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
 Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                          55
 tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
 Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
  65
                      70
                                          75
 ago ego ate goo gto too tae eag ace eec gto aac etc etc tot geo 288
 Ser Arg IIe Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                  85
                                      90
 atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
 lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
 ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
 Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
         115
                             120
 ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
, Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                         135
 gcc aac gac ggg cag gtc tac ttt ggg atc att gcc ctg
 Ala Asn Asp Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                     150
 <210> 33
 <211> 471
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Clone No. 35
 <400> 33
 gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
 Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                      10
 gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
 Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
 gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
 Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                              40
 gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
 Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
      50
                          55
 tog ggo caa ggo tgo coe toe acc cat gtg ctc ctc acc cac acc atc 240
```

Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile

```
65
                     70
                                          75
ago ogo ato aco oco goo ato aac ogg oco gto aac oto oto tot goo 288
Ser Arg Ile Thr Pro Ala Ile Asn Arg Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Giy Ala Giu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                             140
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 34
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 36
<400> 34
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu 11e Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
ago ogo ato gog oco ggo tao too cao oco gto aac oto oto tot goo 288
Ser Arg Ile Ala Pro Gly Tyr Ser His Pro Val Asn Leu Leu Ser Ala
                                     90
ato ogo ago coo tgo cag agg gag aco coa gag ggg got gag goc aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
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105

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ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp-Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
         115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 35
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 37
<400> 35
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
age ege ate age ace ace cae aac eag eee gte aac ete ete tet gee 288
Ser Arg Ite Ser Thr Thr His Asn Gln Pro Val Asn Leu Leu Ser Ala
atc ege age eec tge eag agg gag acc eea gag ggg get gag gee aac 336
ile Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
            100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Ash Arg Pro Asp Tyr Leu Asp Phe
                        135
```

gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg

Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu

150

145

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<210> 36
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 38
<400> 36
gtc aga toa tot tot oga acc oog agt gac atg cot gta god cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
ago ogo ato ggo ggo oog tao oag ogg ooc gto aac etc etc tot goo 288
Ser Arg Ile Gly Gly Pro Tyr Gin Arg Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
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145
<210> 37
<211> 157
<212> PRT
<213> Artificial Sequence
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<220>
<223> Clone No. 1
<400> 37
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Gln Asn Arg Trp
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 38
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 2
<400> 38
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Thr Asn Giy Tyr
Ala Asn Ala Leu Leu Ala Asn Gly Va! Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75
```

Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala

lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn

```
100
                                105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                   150
<210> 39
<211> 157
<212> PRT .
<213> Artificial Sequence
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<223> Clone No. 3
<400> 39
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Ser Asp
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75 -
Ser Arg IIe Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                       135
Ala Ala Arg Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
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<210> 40
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<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 4
<400> 40
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val

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Val Ala Asn Pro Gin Ala Giu Gly Gin Leu Gin Trp Lys Asn Ala Gly
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
Ser Arg IIe Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
lie Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Ser Thr Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
                    150
<210> 41
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 16
<400> 41
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu He Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
Ser Arg IIe Ser Ser Thr Tyr Pro Asp Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
                                                125
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
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<210> 42

<211> 157

<212> PRT

<213> Artificial Sequence

<220>

<223> Clone No. 17

<400> 42

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val 1 5 10 15

Val Ala Asn Pro Gin Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg 20 25 30

Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu 35 40 45

Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe 50 55 60

Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e 65 70 75 80

Ser Arg IIe Ser Lys Thr Tyr Thr His Pro Val Asn Leu Leu Ser Ala 85 90 95

ile Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Giy Ala Giu Ala Asn 100 105 110

Pro Trp Tyr Glu Pro I le Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro 115 120 125

Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe 130 135 140

Ala Glu Ser Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu 145 150 155

<210> 43

<211> 157

<212> PRT

<213> Artificial Sequence

<220>

<223> Clone No. 18

<400> 43

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val 1 5 10 15

Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg 20 25 30

Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu 35 40 45

Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe

```
55
                                             60
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
                    70
                                         75
Ser Arg IIe Ser Pro Leu Tyr Pro Lys Pro Val Asn Leu Leu Ser Ala
                                                         95
                85
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                       135
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 44
<211> 157
<212> PRT
<213> Artificial Sequence
<223> Clone No. 19.
<400> 44
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
'Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr He
                     70
                                         75
Ser Arg Ile Ser Tyr Asn Tyr Asn Gly Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
lie Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                                105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 45
<211> 157
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<212> PRT

<213> Artificial Sequence

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<220>
<223> Clone No..20
<400> 45
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn GlnoLeu
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75
                     .70
Ser Arg IIe Ser Ser Ala Tyr Ala Ser Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135 -
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 46
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 21
<400> 46
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                                                 45
                             40
Val Val Pro Ser Glu Giy Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                     70
                                         75
```

Ser Arg IIe Thr Ser Ala Tyr Gly Pro Pro Val Asn Leu Leu Ser Ala

lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn

.90

```
100
                                105
                                                    110
Pro Trp Tyr Glu Pro IIe Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                            140
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 47
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 22
<400> 47
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
       5
                                    10
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70 .
                                         75
Ser Arg lie Ser Arg Val Tyr Thr Ala Pro Val Asn Leu Leu Ser Ala
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly He He Ala Leu
145
<210> 48
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 23
<400> 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
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10
 Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
 Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
 Vai Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Vai Leu Phe
 Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                     70
Ser Arg Ile Thr Thr Ala Tyr Ser Gly Pro Val Asn Leu Leu Ser Ala
 lle Arg Ser Pro Cys Gln Arg Giu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asm Arg Pro Asp Tyr Leu Asp Phe
                        135
                                             140
Ala Glu Ser Gly Gin Val Tyr Phe Gly lle lle Ala Leu
                    150
<210> 49
<211> 157 ·
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 24
<400> 49
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
Ser Arg Ile Thr His Lys Tyr Pro Gln Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Giy Ala Giu Ala Asn
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
```

145 155 150 <210> 50 <211> 157 <212> PRT <213> Artificial Sequence <220> <223> Clone No. 25 <400> 50 Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val 10 Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gin Leu 35 Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile 70 75 Ser Arg Ile Ser Lys Thr Tyr Ser His Pro Val Asn Leu Leu Ser Ala 85 90 lie Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Giu Ala. Asn 105 Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro 115 120 Gly Asp Arg Leu Ser Ala Giu lie Asn Arg Pro Asp Tyr Leu Asp Phe 135 140 Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu <210> 51 <211> 157 <212> PRT <213> Artificial Seguence <220> <223> Clone No. 26

<400> 51

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
1 5 10 15
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
20 25 30
Ala Asn Ala Leu Leu Ala Asn Giy Val Giu Leu Arg Asp Asn Gin Leu

a Asn Ala Leu Leu Ała Asn Gly Val Glu Leu Arg Asp Asn Gln Leu 35 45

Val Val Pro Ser Glu Gly Leu Tyr Leu He Tyr Ser Gln Val Leu Phe

```
55
 Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
                     70
. Ser Arg IIe Ser Ser His Tyr Arg Phe Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                            140
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 52
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 27
<400> 52
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                    70
                                         75
Ser Arg IIe Thr Pro Ala Tyr Pro Arg Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Giu Ser Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
145
                    150
<210> 53
<211> 157
<212> PRT
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<213> Artificial Sequence

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<220>
<223> Clone No. 28
<400> 53
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                      10
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
                                         75
Ser Arg Ile Thr Lys Ser Tyr Ser Lys Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                     - 135
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 54
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 29
<400> 54
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                      10
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
                                         75
```

Ser Arg Ile Thr Glu Gln Tyr Ser His Pro Val Asn Leu Leu Ser Ala

lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn

90

```
105
Pro Trp Tyr Glu Pro ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                             120
                                                125
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                             140
Ala Glu Ser Gly Gln Val Tyr Phe Gly He He Ala Leu
                     150
<210> 55 -
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 30
<400> 55
Val Arg Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Vai Glu Leu Arg Asp Asn Gln Leu
Val Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
                     70
                                         75
Ser Arg Ile Thr Pro Gly Tyr Pro Ser Pro Val Asn Leu Leu Ser Ala
                                     90
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
            100
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
                    150
                                         155
<210> 56
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 31
<400> 56
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val

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10
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
                                                 45
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
                         55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
Ser Arg Ile Ser Lys Thr Tyr Ser His Pro Val Asn Leu Leu Ser Ala
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro ile Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
                            120
                                                125
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                         140
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 57
<211> 157
<212> PRT
<213> Artificial Sequence
<220>
<223> Clone No. 32
<400> 57
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
                                 25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gin Val Leu Phe
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
Ser Arg IIe Thr Asp Arg Tyr Ser Ser Pro Val Asn Leu Leu Ser Ala
                                     90
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
       115
                            120
                                                125
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ite Ile Ala Leu
```

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41
145
                    150
                                         155
<210> 58
<211> 157
<212> PRT
<213> Artificial Sequence
<223> Clone No. 33
<400> 58
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                25
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
```

130 135 140
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145 150 155

Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe

<210> 59 <211> 157

<212> PRT

<213> Artificial Sequence

<220>

<223> Clone No. 34

<400> 59

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val

1 5 10 15

Val Ala Asp Pro Glp Ala Glu Gly Glp Leu Glp Tro Leu Asp Arg Arg

Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg 20 25 30

Ala Asn Ala Leu Leu Ala Asn Giy Val Glu Leu Arg Asp Asn Gin Leu 35 40 45

Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe

```
55
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                                         75
Ser Arg Ile Ser Ala Asp Tyr Pro His Pro Val Asn Leu Leu Ser Ala
                                     90
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                            140
Ala Glu Ser Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
145
                    150
<210> 60
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 1
<400> 60
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg cag aac agg tgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Gin Asn Arg Trp
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser-Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                    70
ago ogo ato goo gto too tao oag aco oco gto aac etc etc tot goo 288
Ser Arg Ile Ala Val Ser Tyr Gin Thr Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                           120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
```

```
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                     150
                                         155
<210> 61
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 2
<400> 61
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                  5
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg acg aac ggg tac 96
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Thr Asn Gly Tyr
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gin Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
ago ogo ato goo gto too tac oag aco oco gto aac oto oto tot goo 288
Ser Arg Ile Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
                                 105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
                                                 125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
goo gag tot ggg cag gto tac ttt ggg ato att goo ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
<210> 62
<211> 471
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<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 3
<400> 62
gto aga toa tot tot oga acc cog agt gac atg cot gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
  1
gta gca aac cct caa gct gag ggg cag ctc cag tgg tcc aac agc gac 96
Val Ala Asn Pro Gin Ala Glu Gly Gln Leu Gln Trp Leu Asn Ser Asp
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
                                                 45
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Val Leu Phe
     50
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc at 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
ago ogo ato goo gto too tao dag ado doo gto aad oto oto tot goo 288 -
Ser Arg IIe Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
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gcc gcc cgc ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Ala Arg Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 63
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 4
<400> 63
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
```

```
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
gta goa aac oot caa got gag ggg cag oto cag tgg aag aac goo ggo 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Lys Asn Ala Giy
             20
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         55
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
 65
                     70
                                         75
ago ogo ato goo gto too tao oag aco oco gto aac oto oto tot goo 288
Ser Arg IIe Ala Val Ser Tyr Gln Thr Pro Val Asn Leu Leu Ser Ala
ate ege age eee tge eag agg gag ace eea gag ggg get gag gee aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gct tcg acg ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Ser Thr Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 64
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 16
<400> 64
gto aga toa tot tot oga acc oog agt gac atg cot gta goc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
```

40

45

35

```
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
   - 50
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75
                     70
ago ogo ato ago tog aco tac oco gao oco gto aac oto oto tot goo 288
Ser Arg Ile Ser Ser Thr Tyr Pro Asp Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                                                125
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tct ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 65
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 17
<400> 65
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Gly Gin Leu Gin Trp Leu Asn Arg Arg
             20
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu He Tyr Ser Gln Val Leu Phe
                         55
tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
65
                     70
                                         75
age ege ate teg aag ace tac ace cac eec gte aac etc etc tet gee 288
Ser Arg Ile Ser Lys Thr Tyr Thr His Pro Val Asn Leu Leu Ser Ala
```

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85
                                      90
 atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
 lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                                 105
 ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc-cag ctg gag ccg 384
 Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                             120
 ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Va! Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 66
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 18
<400> 66
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                      10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                  25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu 11e Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
ago ogo ato too coo otg tao oco aag oco gto aac oto oto tot goo 288
Ser Arg Ile Ser Pro Leu Tyr Pro Lys Pro Val Asn Leu Leu Ser Ala
                 85
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                 105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
```

```
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                             140
 god gag tot ggg dag gtd tad tit ggg atd ait god dig
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
<210> 67
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 19
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
             20
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu ile Tyr Ser Gin Val Leu Phe
                         55
                                             60
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
 65
ago ogo ato too aco aac tac aac ggo oco gto aac oto oto tot goo 288
Ser Arg Ile Ser Tyr Asn Tyr Asn Gly Pro Val Asn Leu Leu Ser Ala
                 85
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Giu Ser Gly Gin Val Tyr Phe Gly lie i'le Ala Leu
145
                    150
<210> 68
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<211> 471

<212> DNA

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<213> Artificial Sequence
<220> -
<223> Cione No. 20
<400> 68
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                                                45
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lie Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                                         75
ago ego ato tee ago gog tae gog ago eco gto aac etc etc tet geo 288
Ser Arg Ile Ser Ser Ala Tyr Ala Ser Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
                                                125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lie Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly lie lle Ala Leu
145
                    150
                                        155
<210> 69
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 21
<400> 69
gto aga toa tot tot oga aco oog agt gao atg oot gta goo oat gtt 48
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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                      10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                              40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
                         -55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
ago ogo ato tog tog goo tao ggg oog oco gto aac oto oto tot goo 288
Ser Arg Ile Thr Ser Ala Tyr Gly Pro Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn.
                                 105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
                                                125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
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                                         155
<210> 70
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 22
<400> 70
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
```

```
gtg gtg cca toa gag ggc ctg tac ctc atc tac toc cag gtc ctc ttc 192
 Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gin Val Leu Phe
                          55
 tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
 Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                      70
                                         . 75
 ago ogo ato tog ogo gtg tac aco goo coo gto aac ctc ctc tot goo 288
 Ser Arg Ile Ser Arg Val Tyr Thr Ala Pro Val Asn Leu Leu Ser Ala
 atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
 lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro 11e Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                             120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu lle Asn Arg Pro Asp Tyr Leu Asp Phe.
                         135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly lie lie Ala Leu
145
                     150
<210> 71
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 23
<400> 71
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
  1
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Glu Gly Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
     50
                         55
tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                     70
ago ogo ato acg acg gog tac ago ggo oco gto aac etc etc tet geo 288
Ser Arg IIe Thr Thr Ala Tyr Ser Gly Pro Val Asn Leu Leu Ser Ala
```

```
90
 ato ogo ago oco tgo cag agg gag aco oca gag ggg got gag goc aac 336
 lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 72
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 24
<400> 72
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cet caa get gag ggg cag etc cag tgg etg aac ege egg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
                             40
                                                 45
gtg gtg cca toa gag ggc ctg tac ctc atc tac toc cag gtc. ctc ttc 192 s
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
                         55
tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
ago ego ate aeg cae aag tae eeg eag eee gte aac ete ete tet gee 288
Ser Arg IIe Thr His Lys Tyr Pro Gln Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
```

```
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
             140 -
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly I le I le Ala Leu
145
                    150
<210> 73
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 25
<400> 73
gtc aga tca tct tct cga acc ccg agt gac atg-cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
 1 1
                5
                                    10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
tog ggo caa ggo tgo coe toe ace cat gtg ctc ctc ace cae ace atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                     70
                                         75
ago ego ato ago aag aco tao too cao eco gto aac eto eto tet geo 288 -
Ser Arg IIe Ser Lys Thr Tyr Ser His Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly He He Ala Leu
145
                    150
                                        155
<210> 74
<211> 471
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<212> DNA
 <213> Artificial Sequence
<223> Clone No. 26
<400> 74
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca toa gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
     -50
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
ago ogo ato tog too cao tao agg tto oco gto aac oto oto tot goo 288
Ser Arg Ile Ser Ser His Tyr Arg Phe Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gin Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 75
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 27
<400> 75
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
```

```
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                    10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
          . 20
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca toa gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
65
                                         75
                     70
ago ego ato aco eco geo tac eco egg eco gto aac eto eto tet geo 288
Ser Arg Ile Thr Pro Ala Tyr Pro Arg Pro Val Asn Leu Leu Ser Ala
                 85
                                   ຸ 90
ate ege age eec tge eag agg gag ace eea gag ggg get gag gee aac 336
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120 125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly IIe IIe Ala Leu
                    150
<210> 76
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 28
<400> 76
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                            . 40
```

```
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
                         55
tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr lle
                     70
                                         75
ago ogo ato aog aag too tao too aag ooc gto aac oto oto tot goo 288
Ser Arg lie Thr Lys Ser Tyr Ser Lys Pro Val Asn Leu Leu Ser Ala
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Giu Thr Pro Giu Gly Ala Giu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lle Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
                                                 125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
                                             140
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 77
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 29
<400> 77
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
             20
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
                         55
tog gge caa gge tge cee tee ace cat gtg etc etc ace cac ace atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
65
                     70
age ege ate ace gag eag tac tee eac eec gte aac etc etc tet gee 288
Ser Arg Ile Thr Glu Gin Tyr Ser His Pro Val Asn Leu Leu Ser Ala
```

```
85
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Giy Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                    150
<210> 78
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 30
<400> 78
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                . 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
                         55
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
age ege ate aeg eee eag tae eeg tee eee gte aac ete ete tet gee 288
Ser Arg lie Thr Pro Gly Tyr Pro Ser Pro Val Asn Leu Leu Ser Ala
                85
atc ege age eec tge cag agg gag acc eea gag ggg get gag gee aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
```

```
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                      135
gcc gag tct ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile lle Ala Leu
                  150
<210> 79
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 31
<400> 79
gtc aga toa tot tot oga acc oog agt gac atg cot gta god cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu lle Tyr Ser Gln Val Leu Phe
tog ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240 1
Ser Gly Gin Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
65
                                         75
ago ogo ato ago aag aco tao too cao oco gto aac oto oto tot goo 288
Ser Arg Ile Ser Lys Thr Tyr Ser His Pro Val Asn Leu Leu Ser Ala
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gin Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
        115
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tct ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
                    150
                                        . 155
<210> 80
<211> 471
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<212> DNA
 <213> Artificial Sequence
 <223> Clone No. 32
<400> 80
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                  25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
tog ggo caa ggo tgo coo too acc cat gtg ctc ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr IIe
ago ogo ato acg gao ogo tao ago ago oco gto aao oto oto tot goo 288
Ser Arg Ile Thr Asp Arg Tyr Ser Ser Pro Val Asn Leu Leu Ser Ala
                                     90
atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
            100
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Vai Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tct ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly lle lle Ala Leu
145
                    150
<210> 81
<211> 471.
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 33
<400> 81
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gto aga toa tot tot oga acc cog agt gac atg cot gta gcc cat gtt 48

```
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25_
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
         35
                             40
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
tog ggo caa ggo tgo coo too acc cat gtg cto ctc acc cac acc atc 240
Ser Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr 11e
                     70
                                         75
ago ogo ato aac cac agg tac cag gac oco gto aac oto oto tot goo 288
Ser Arg Ile Asn His Arg Tyr Gln Asp Pro Val Asn Leu Leu Ser Ala
                 85
                                     90
ate ege age eec tge eag agg gag ace eea gag ggg get gag gee aac 336
lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
                                105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                            120
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
    130
                        135
gcc gag tot ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly 11e 11e Ala Leu
                  . . . 150
<210> 82
<211> 471
<212> DNA
<213> Artificial Sequence
<220>
<223> Clone No. 34
<400> 82
gtc aga tca tct tct cga acc ccg agt gac atg cct gta gcc cat gtt 48
Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Met Pro Val Ala His Val
                                     10
gta gca aac cct caa gct gag ggg cag ctc cag tgg ctg aac cgc cgg 96
Val Ala Asn Pro Gin Ala Giu Giy Gin Leu Gin Trp Leu Asn Arg Arg
                                 25
gcc aat gcc ctc ctg gcc aat ggc gtg gag ctg aga gat aac cag ctg 144
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
```

```
gtg gtg cca tca gag ggc ctg tac ctc atc tac tcc cag gtc ctc ttc 192
 Val Val Pro Ser Glu Gly Leu Tyr Leu IIe Tyr Ser Gln Val Leu Phe
                          55
 tcg ggc caa ggc tgc ccc tcc acc cat gtg ctc ctc acc cac acc atc 240
 Ser Gly Gin Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
                      70
                                          75
 ago ogo ato too gog gao tao ooc cao ooc gto aac oto oto tot goo 288
 Ser Arg Ile Ser Ala Asp Tyr Pro His Pro Val Asn Leu Leu Ser Ala
 atc cgc agc ccc tgc cag agg gag acc cca gag ggg gct gag gcc aac 336
 lle Arg Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Asn
             100
                                 105
ccc tgg tat gag ccc atc tat ctg gga ggg gtc ttc cag ctg gag ccg 384
Pro Trp Tyr Glu Pro lie Tyr Leu Gly Gly Val Phe Gln Leu Glu Pro
                             120
                                                 125
ggt gac cga ctc agc gct gag atc aat cgg ccc gac tat ctc gac ttt 432
Gly Asp Arg Leu Ser Ala Glu IIe Asn Arg Pro Asp Tyr Leu Asp Phe
                        135
gcc gag tct ggg cag gtc tac ttt ggg atc att gcc ctg
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145
                                         155
<210> 83
<211> 87
<212> DNA
<213> Artificial Sequence
<220>
<223> Oligonucleotide as a primer having NNS sequences (for mutating the
amino acid residues at the 29,31 and 32)
<400> 83
gacatgootg tagoocatgt tgtagoaaac cotcaagotg aggggcagot coagtggnns 60 -
aacnnsnnsg ccaatgccct cctggcc
<210> 84
<211> 57
<212> DNA
<213> Artificial Sequence
<220>
<223> Oligonucleotide as a primer having NNS sequences (for mutating the
amino acid resudues at the 145 to 147)
cagggcaatg atcccaaagt agacctgccc snnsnnsnna aagtcgagat agtcggg
```

```
<211> 65
<212> DNA
<213> Artificial Sequence
<223> Oligonucleotide as a 5'-terminal linker to insert the PCR-amplified
DNA into a phagemid vector
<400> 85
cccagccggc catggccgtc agatcatctt ctcgaacccc gagtgacatg cctgtagccc
<210> 86
<211> 62
<212> DNA
<213> Artificial Sequence
<220>
<223> Oligonucleotide as a 3'-terminal linker to insert the PCR-amplified
DNA into a phagemid vector
<400> 86
ggcaccggcg cacctgcggc cgcagatcca ccaccaccca gggcaatgat cccaaagtag
<210> 87
<211> 87
<212> DNA
<213> Artificial Sequence
<220>
<223> Oligonucleotide as an anti-sense primer having NNS sequences (for m
utating amino acid residues at the position 84-89)
<400> 87
ctggcagggg ctgcggatgg cagagaggag attgacgggs nnsnnsnnsn nsnnsnngat
gcggctgatg gtgtgggtga ggagcac
<210> 88
<211> 218
<212> DNA
<213> Artificial Sequence
<220>
<223> Oligonucleotide as a 3'-terminal linker to insert the PCR-amplified
DNA into a phagemid vector
<400> 88
ggcaccggcg cacctgcggc cgcagatcca ccaccaccca gggcaatgat cccaaagtag
```

acctgoccag actoggoaaa gtogagatag togggoogat tgatotoago gotgagtogg 120° cocacoggot coagotggaa gaccoctoco agatagatgg gotcatacoa ggggttggoo 180° toagoccoct otggggtoto octotggoag gggotgog

<210> 89

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide as a 5'-terminal linker to insert the PCR-amplified DNA into an expression vector

<400> 89

tatacatatg gtcagatcat cttctcgaac cccgagtg

<210> 90

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide as a 3'-terminal linker to insert the PCR-amplified DNA into an expression vector

<400> 90

aaggatccct acagggcaat gatcccaaag tagac